

Chemistry Review Notes

Atomic Structure

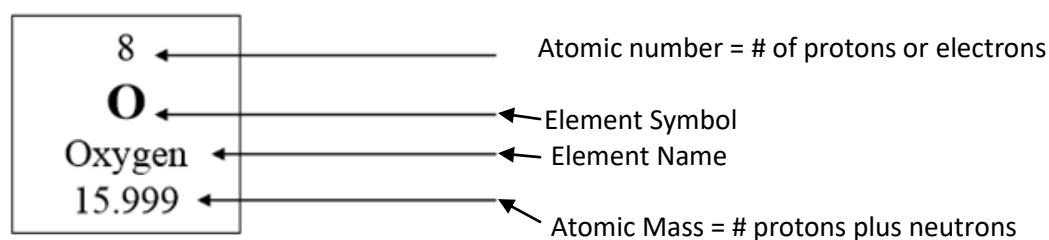
Atoms:

- Building blocks of all things
- Smallest particle that can still be considered an element
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<u>Particle</u>	<u>Charge</u>	<u>Mass (amu = atomic mass unit)</u>	<u>Location</u>
Proton	+	1	nucleus
Neutron	no charge; neutral	1	nucleus
Electron	-	0.00056	Electron cloud

- The proton is like the identification number for the atom
 - atoms of different types will NEVER have the same number of protons

How to interpret the periodic table



- To find the number of neutrons in an atom, subtract the number of protons from the atomic mass
 - $15.999 - 8 = 7.999$
 - Regular rounding rules apply—that is you cannot have .999 if a neutron, so ROUND Up
 - Oxygen has 8 neutrons
- The Periodic table is arranged according to atomic number
- Horizontal rows are called periods
- Vertical columns are called groups or families

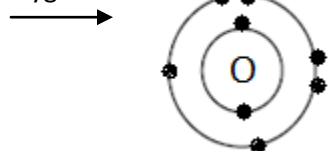
Drawing Structures

Rules:

1. first energy level can hold two electrons
2. every other energy level can hold 8 electrons
3. Electrons can only be placed at 12, 3, 6 and 9 position, like a clock
4. when drawing, put electrons by themselves first then pair up

Bohr Diagram- accounts for ALL electrons that an atom has

Bohr diagram for Oxygen



Lewis Structure or Electron Dot Diagram- account for valence electrons only

Valence Electrons- those electrons on the outermost energy level



- To find the number of valence electrons look at the group number that the element is in
 - If the element is in group 1 or group 2, the group number IS the number of valence electrons

- If the element is in group 13-18, to find the number valence electrons take the group number and subtract 10

Ions and Reading Chemical Formulas

Ion- any atom or group of atoms with a charge

To find a the charge on an atom

1. Determine if atom is metal or non metal (metals lose electrons, non metals gain electrons)
2. Determine the number of valence electrons (the atom will lose **all** valence electrons or will gain enough to have full outer energy level)

Ex.

Sodium- Na

Ex.

Fluorine - F

1.) Metal, lose electrons

2.) Valence electrons = 2

Charge: Na^{2+}

1.) Non metal, gain electrons

2.) Valence electrons = 7

Charge: F^{1-}

Chemical Formulas- representation of the number of atoms present in a particular compound or molecule

Subscript-the number of that particular atom in the compound, if only one atom, no subscript is written

Ex. Fe_2O_3 (Hematite) The number two and three are subscripts.

- There are two atoms of Iron (Fe) for every three atoms of Oxygen (O)

Ex. SiO_2 (Quartz)

- There is one atom of silicon (Si) for every two atoms of Oxygen (O)